

CLAIMS:

1. An ambulatory storage system for pressurized gases; the storage system including:

a pressurized gas container;

valving, including a regulator, on the container to control the delivery of gas to a user;

a hose extending from the valving and having a fitting on the end thereof to deliver the gas from the container; and

a conserver; the conserver comprising:

a body having an inhalation chamber and an exhalation chamber; said inhalation and exhalation chambers being in fluid communication with each other via a first port; a valve in said first port to selectively open and close said first port; a diaphragm in said inhalation chamber dividing said chamber into a first part and a second part;

an outlet passage extending from said body; said outlet passage being in communication with both said inhalation chamber and said exhalation chamber via an outlet port and an exhalation port, respectively; said body including an outlet valve in said outlet port to selectively open and close said outlet port and an exhalation valve in said exhalation port to selectively open and close said exhalation port;

a neck extending up from said body; said neck defining a chamber and including an inlet connectable to a source of oxygen;

a plunger in said neck axially movable in said neck chamber between an upward position and lowered position; said plunger having a stem in operative engagement with said diaphragm to move said diaphragm down as said plunger moves down; a seal around said plunger to define an air-tight seal between said plunger and said neck; said seal dividing said neck into a neck upper chamber and a neck lower chamber; said plunger being biased to an upward position by a spring element;

a control passage extending from said neck to said exhalation valve to place said valve in communication with said neck chamber; and a supply passage to place said neck in communication with said inhalation chamber second section; said supply and control passages being reciprocally placed in communication with said neck upper chamber and hence said neck inlet as said plunger reciprocates between its upward and lowered positions.

2. The ambulatory storage system of claim 1 wherein said conserver is remote from said regulator; said hose comprising a first section extending from said regulator to said conserver and a second section extending from said conserver to said fitting.

3. A conserver for conserving oxygen supplied from an oxygen tank to a person; the conserver comprising:

a body having an inhalation chamber; a diaphragm in said inhalation chamber dividing said chamber into a first part and a second part;

an outlet passage extending from said body; said outlet passage being in communication with said inhalation chamber via an outlet port and including an

exhalation port; said body including an outlet valve in said outlet port to selectively open and close said outlet port and an exhalation valve in said exhalation port to selectively open and close said exhalation port;

a neck extending up from said body; said neck defining a chamber and including an inlet connectable to a source of oxygen;

a plunger in said neck reciprocally and axially movable in said neck chamber between an upward position and lowered position; said plunger having a stem in operative engagement with said diaphragm to move said diaphragm down as said plunger moves down; a seal around said plunger to define an air-tight seal between said plunger and said neck; said seal dividing said neck into a neck upper chamber and a neck lower chamber; said plunger being biased to an upward position by a spring element;

a control passage extending from said neck to said exhalation valve to place said valve in communication with said neck chamber; and a supply passage to place said neck in communication with said inhalation chamber second section; said supply and control passages being reciprocally placed in communication with said neck upper chamber and hence said neck inlet as said plunger reciprocates between its upward and lowered positions.

4. The conserver of claim 3 including an exhalation chamber; said inhalation and exhalation chambers being in fluid communication with each other via a first port; a first valve in said first port to selectively open and close said first port.

5. The conserver of claim 4 wherein said exhalation port places said exhalation chamber in fluid communication with said outlet passage.

6. The conserver of claim 3 including a volume control to adjust the maximum volume of the inhalation chamber.

7. The conserver of claim 6 wherein said volume control includes a rotatable knob on said neck; said knob including a shaft extending through said neck and being operatively connected to said piston, such that said piston is rotated in said neck due to rotation of said knob; said piston shaft having a threaded end received in a threaded hole in said diaphragm disk; such that rotation of said piston shaft moves said diaphragm disk axially relative to said piston shaft.

8. The conserver of claim 7 wherein said piston is movable axially relative to said knob shaft.

9. The conserver of claim 3 wherein said first valve and said outlet valve are check valves.

10. The conserver of claim 3 wherein said exhalation valve is a diaphragm valve.